**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
2565 PLYMOUTH ROAD
ANN ARBOR, MICHIGAN 48105-2498

OFFICE OF
AIR AND RADIATION

February 19, 2003 CCD-02-23 (LDV/LDT/ICI/LIMO)

Dear Manufacturer:

Subject: Vehicle On-Board Diagnostic Procedures - Implementation of a new OBD Inspection & Validation Procedure at the United States Environmental Protection Agency's National Vehicle and Fuel Emissions Laboratory

Under the On-Board Diagnostics-Inspection and Maintenance (OBD-I/M) regulations, states currently performing I/M tailpipe tests are allowed to use OBD checks in I/M programs beginning in calendar year 2002. Many states have already begun advanced or pilot OBD checks in their I/M programs and some of the following issues have been identified in the pilot programs: aftermarket scan tools and vehicle incompatibility, improper communication protocol implementation, lack of readiness code setting or infrequent operation of monitors, MIL command during a bulb check, and difficulty in locating OBD diagnostic link connectors (DLC). Therefore, EPA is implementing a new OBD System Inspection/Validation Check as part of our on-going effort to review and improve vehicle OBD systems. This check will be added to existing NVFEL emission certification compliance procedures for certification, fuel economy, ICI, and other confirmatory vehicles and will provide EPA with valuable feedback on OBD system design and performance. This letter provides the details of the OBD Inspection/Validation Check that will be performed at the EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL) located in Ann Arbor, Michigan.

EPA needs to ensure as early as possible in the vehicle's life that all of the OBD functions perform as expected for the following reasons:

- To confirm that OBD systems comply with the federal regulations at 40 CFR Part 86.1806-05 (e), (f) and (h) prior to allowing vehicles to be produced;
- Prevent obvious issues that affect OBD-I/M Programs implementation such as establishing vehicle communications, erroneous information transmitted to the scan tool, loss of communications and other issues that have been identified in OBD-I/M pilot programs; and
- To ensure that diagnostic tools used by service technicians are able to communicate with the vehicle's computer and provide accurate information when performing emission-related diagnostics and repair.

All light-duty vehicles, light-duty trucks and complete heavy-duty vehicles below 14,000 pounds GVWR equipped with an OBD system that are tested at the U.S. EPA's National Vehicle and Fuel

Emissions Laboratory (NVFEL) will be subject to the OBD Inspection & Validation Procedure. This includes vehicles that the manufacturer supplies or vehicles recruited in test programs conducted by the U.S. EPA at NVFEL for emissions and fuel economy certification/confirmation, in-use surveillance, or similar testing. The procedure will be performed using one or more aftermarket OBD-compliant scan tools to communicate and record OBD system information and performance before (pre-test) and after (post-test, if necessary) the applicable EPA emission test procedures. In addition, the DLC location, according to the mapping diagram for the DLC database developed by EPA, and the DLC accessibility (i.e., covered or uncovered) will be recorded.

The OBD System Inspection & Validation Procedure will be conducted before emission testing in order to maintain vehicle integrity throughout the applicable test(s) sequence. Manufacturers will receive a copy of the completed OBD Inspection/Validation Check form. If any problems occur during the OBD check, the manufacturer will be asked to provide an explanation and resolution for the issue.

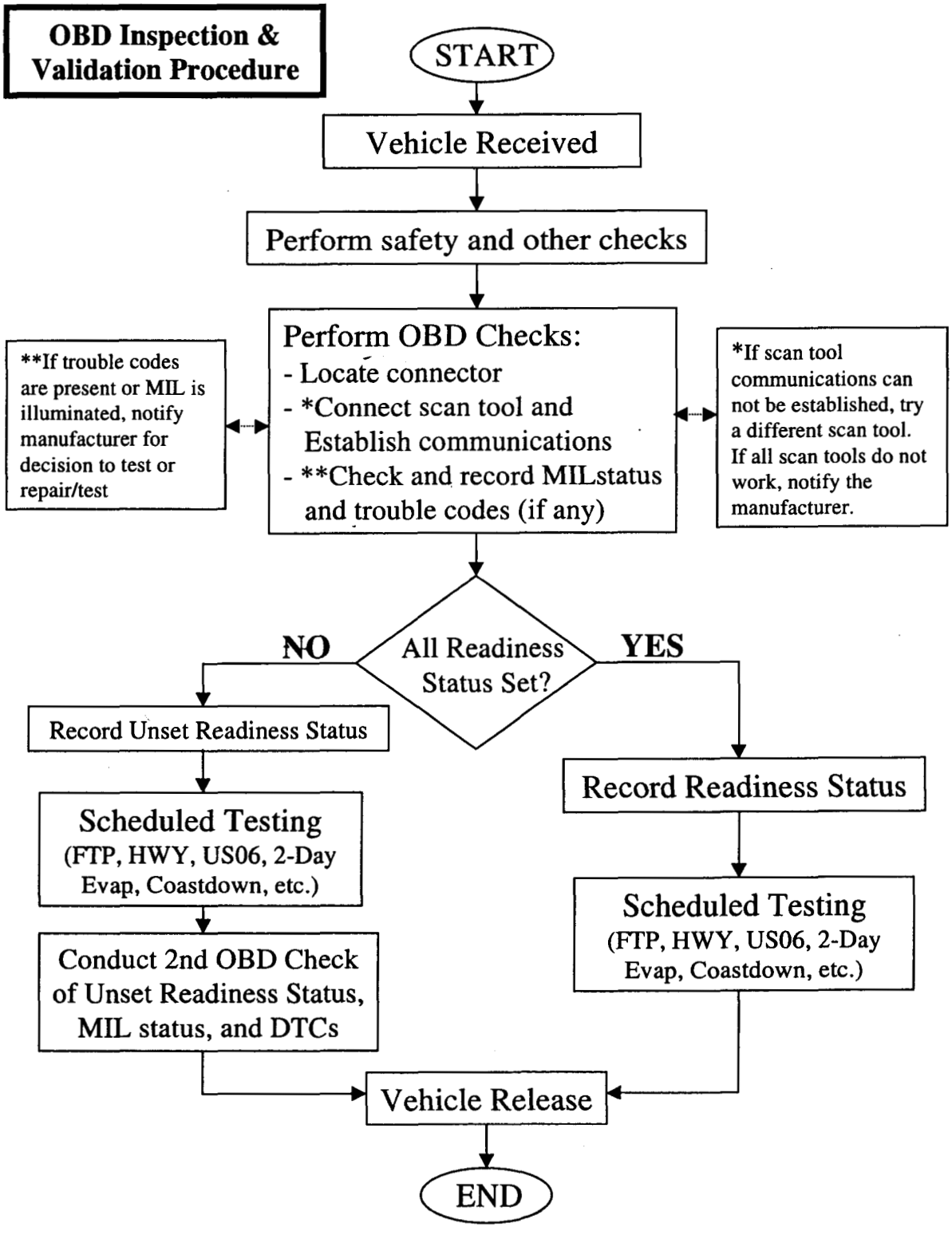
To provide a better understanding of the NVFEL OBD Inspection & Validation Procedure a flow diagram of the process and a sample of a completed form are attached. If you have any questions or concerns about this procedure, you may contact Arvon L. Mitcham at 734-214-4522, email: mitcham.arvon@epa.gov, or your assigned EPA certification team representative.

Sincerely,

Gregory A. Green, Director
Certification and Compliance Division
Office of Transportation and Air Quality

Attachments

ON-BOARD DIAGNOSTIC INSPECTION & VALIDATION FLOW DIAGRAM



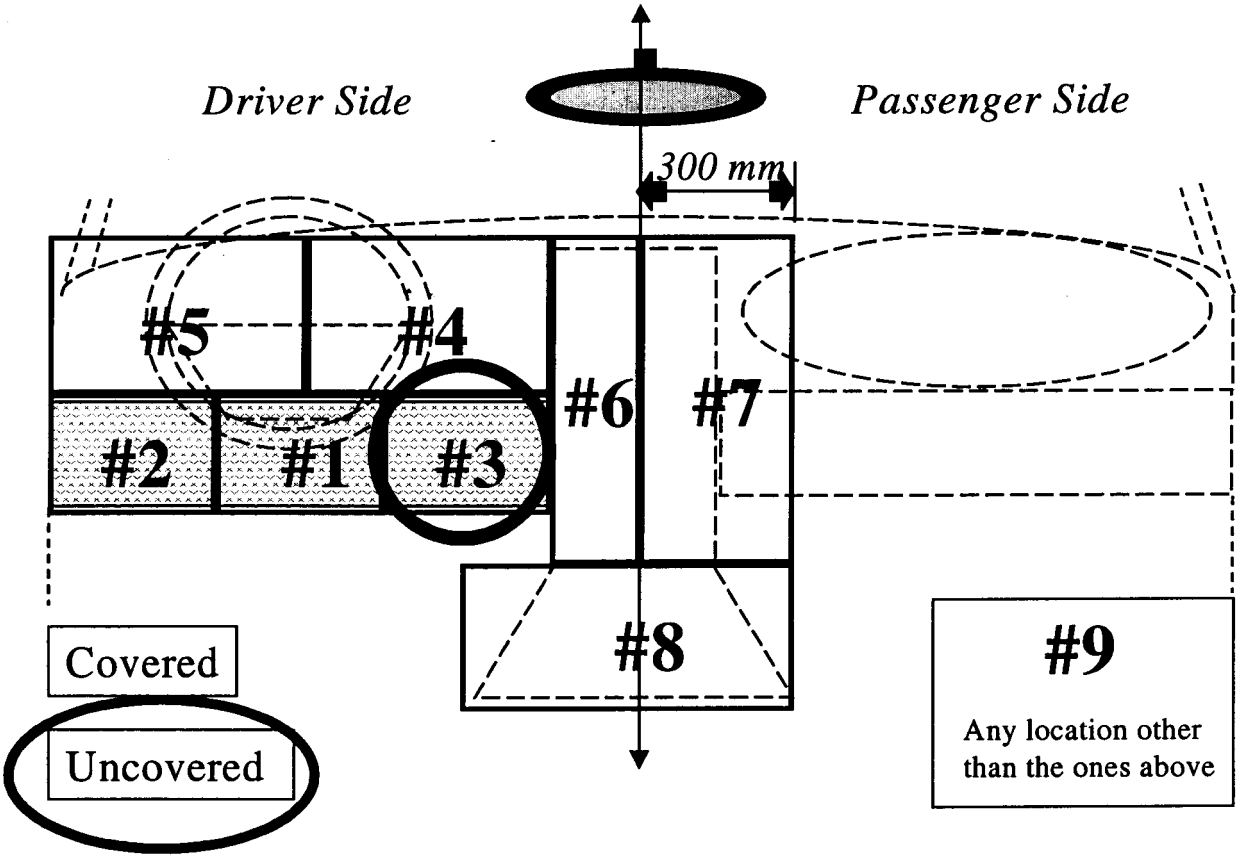
SAMPLE OBD INSPECTION & VALIDATION PROCEDURE FORM

**ON-BOARD DIAGNOSTIC**
**INSPECTION & VALIDATION PROCEDUR**



Manufacturer: General Motors — Certification Rep: D. Dobson
Test #: 202 — Date: Dec. 5 000 — time: 8:30 a.m.
Test Procedure: Prep/FTP/HWY — Engine Family: NGMX 2.20T 1
Vehicle ID #: 2222N5422 — Evap Family: WWG O22T 9
Model Year: 2002 — Mileage: 4061

1) Locate OBD connector on vehicle and connect the scan tool. If connector cannot be located, contact the certification rep. for this manufacturer or vehicle. After you have located the connector, note its location using the diagram below by circling one of the numbered boxes. Also, note if the connector is covered or uncovered by circling the appropriate box.




2) After connecting the scan tool, it should automatically establish communications with the vehicle. If the scan tool cannot establish communications, contact the certification rep. for this manufacturer or vehicle.

***Proceed to the next page to begin the OBD scan and collect specified information.**

**OBD Checks:**

- Check (✓) only one box for each category (except for trouble code listing)
- Refer to the scan tool procedure for performing the functions listed below.
- Remember to enter your initials for the pre-test and post-test checks.



A) MIL Illumination?: YES _____ NO ✓

B) Active Trouble Codes Present?: YES _____ NO ✓

If "YES", please list all codes present:

C) Pending Trouble Codes Present?: YES ✓ NO _____

If "YES", please list all codes present:
P0442

D) All Readiness Monitors Set? YES ✓ NO _____

If "NO", indicate unset readiness status below and re-check after testing is complete. Also, check for a MIL and DTCs noting any that are present in the comments section below. (Note: check all that apply)

| | Tech. Init. _____ | Tech. Init. _____ |
|---|---|---|
| Readiness Status Monitors | **Pre-Test** | **Post-Test** |
| Misfire | | |
| Fuel Trim | | |
| Comprehensive Components | | |
| Catalyst | | |
| Heated Catalyst | | |
| Evaporative System | | |
| Secondary Air System | | |
| A/C System Refrigerant | | |
| Oxygen (O2) Sensor | | |
| Oxygen (O2) Sensor Heater | | |
| EGR System | | |

4) Comments: Manufacturer agreed to test vehicle despite P0442 code present. If MIL illuminates, we will suspend testing and the manufacturer will take the vehicle back to perform maintenance